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Pathways to Immortality in the New Millennium: Human Responsibility, Theological Direction, or Legal Mandate

George P. Smith II
The Catholic University of America, Columbus School of Law

PATHWAYS TO IMMORTALITY IN THE NEW MILLENNIUM: HUMAN RESPONSIBILITY, THEOLOGICAL DIRECTION, OR LEGAL MANDATE

GEORGE P. SMITH, II*

I. SCIENCE AND RELIGION: TOWARD A COMMON GOAL?

Science has been defined as "intelligence in action with no holds barred."[1] It began as but a simple pursuit of truth but is today fast becoming incompatible with veracity, quite simply because complete veracity leads to a form of complete scientific skepticism.[2] Science was recognized originally, and indeed valued, as a method to know and understand the world.[3] Ever since the time of the Arabs, in fact, science has had but two simple functions: to enable us to know and learn about things and to thereby assist us in doing things.[4] Now, as a consequence of the development of the scientific method and the triumph of technique, science is viewed as a means of changing the world.[5]

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* Professor of Law, The Catholic University of America Washington, D.C. Visiting Fellow, Institute for the Study of Applied and Professional Ethics, Dartmouth College, Hanover, New Hampshire.

1. Hudson Hoagland, *Some Reflections on Science and Religion*, *in* SCIENCE PONDERS RELIGION 17, 18 (Harlow Shapley ed., 1960) (quoting the physicist P.W. Bridgman).

2. BERTRAND RUSSELL, THE SCIENTIFIC OUTLOOK (1931).

3. BERTRAND RUSSELL, THE IMPACT OF SCIENCE ON SOCIETY 18 (1953).

4. *Id.* at 18. The Greeks, with Archimedes being the exception, were interested only in the first function. The Arabs, however, were in quest of the elixir of life and the methods needed to transmute base metals into gold. *Id. See generally* JOHN B. S. HALDANE, DAEDALUS OR SCIENCE AND THE FUTURE (1924).

5. RUSSELL, *supra* note 3, at 98.

> The history of science, then, reveals that it is based on creative leaps of imaginative vision . . . . The most fundamental principles of science, therefore, are not based on objective proof; rather they are based on the convictions of those who hold them that *this* way of viewing things has relevance and fruitfulness. And even "fruitfulness" can be established objectively only *in the future*, through work accomplished in the slow inquiries of the normal science that results when the new vision has become orthodoxy. In itself, therefore, and at its inception the new vision is affirmed in risk and therefore in passion, and essentially it is *self*-validating, providing reasoned answers and valid tests apparent only to those who hold its general contours to be true.

LANGDON GILKEY, RELIGION AND THE SCIENTIFIC FUTURE: REFLECTIONS ON MYTH, SCIENCE,

Probabilities are at the center of scientific inquiry. As such, an absolute form of truth is not within its scope of realization. Yet science can yield—in the final analysis—such a high degree of probability, for all practical purposes, to become certainty.[6] Science is, then, a way of ordering experience. It is ordered knowledge. Its constant testing and referral to the facts of past experience should be viewed as the only valid way which enables man to progressively increase both his knowledge and control of the objective world.[7] This constant reference back to experience in the quest for knowledge is the most significant attribute of the scientific method; for from it comes "the cosmic side of that intellectual scaffolding of religion which we call theology."[8] Scientific theory always is recognized as tentative—with modifications sooner or later found necessary. The scientific method, then, is one which is logically incapable of arriving at an ultimate statement.[9]

Religion, to a considerable extent, consists in a way of feeling sometimes more than in a set of beliefs.[10] The beliefs are secondary or supportive of these feelings. There are some things people believe, then, because they feel as though they are true,[11] and such feelings and beliefs are a source of mystery and incomprehensibility to the scientific mind. Faith is an unknown and rather primitive principle to the scientist.[12]

Religion, from the standpoint of maintaining its strength, efficiency, or power, must face change in the same spirit as science does. While religion's principle may be immutable and eternal, the expression of those principles requires a continual development.[13]

There is little doubt that one of the most curious features seen in the seven-

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AND THEOLOGY 45 (1970); *see also* JACQUES MARITAIN, SCIENCE AND WISDOM 32 (1940); HERBERT J. MULLER, SCIENCE AND CRITICISM 74-75 (1943) (asserting that science is an indispensable means for a better life on earth).

6. Hoagland, *supra* note 1, at 24. The examples used for support of this last statement are: the certainty that the earth is round, not flat and the realization that biological evolution—by natural selection—is no longer but a theory, but a high probability. *Id.* In its fundamental phase, science is an explanation by description using methods of observation and experiment. The fundamental assumptions which it makes are practical conclusions of common sense: namely, that the objects and the events constituting the material universe are in a necessary connection with one another and that man, by his decisions, can affect the order and events of the universe itself. W. LAWRENCE SCHROEDER, SCIENCE, PHILOSOPHY AND RELIGION 44, 45, 58 (1933).

7. JULIAN S. HUXLEY, SCIENCE, RELIGION, AND HUMAN NATURE 20, 21 (1930).

8. *Id.* at 21.

9. BERTRAND RUSSELL, RELIGION AND SCIENCE 257 (1935).

10. *Id.* at 14.

11. RUSSELL, *supra* note 3, at 16.

12. *See* FILMER S. NORTHROP, SCIENCE AND FIRST PRINCIPLES 274 (1931); *see also* ALFRED N. WHITEHEAD, SCIENCE AND THE MODERN WORLD 262 (1947).

13. ALFRED N. WHITEHEAD, THE INTERPRETATION OF SCIENCE 179 (A.H. Johnson ed., 1961).

teenth century among natural philosophers—Issac Newton, Robert Boyle, Thomas Sprat and John Wilkins—was their duality of belief in and commitment to a recognition of a philosophy of science premised upon "a mechanical universe governed by immutable laws of nature"; yet one which of necessity allowed for an "omnipotent God who intervened in the natural order from time to time, breaching these 'laws' of nature" through miracles.[14] At least in England, this patent ambiguity was heightened by the fact that those in the forefront of validating and espousing mechanical science were also the staunchest defenders of miracles—insisting, as such, that miracles could take place and, indeed, play a prominent role in establishing the very truth of the Christian religion.[15]

During the middle and latter half of the nineteenth century, science made its greatest inroads into religion. A credibility gap began to open between what could be explained within the framework of religion and what could be explained with the scientific frame of analysis. Some view this gap as continuing to widen simply because the more scientific discoveries about the universe that are made, the less explicable they become. Some thirty years ago it was generally believed that science was gradually attempting, quite successfully, to explain the entire universe. As scientific facts were presented, the understanding of the universe continually increased. Today, however, there is a concern because rationalists and humanists are suggesting that within the near future science will not be able to say anything fundamental about the true nature of the universe.[16]

The advancement of science is blamed often for a loss of religious faith.[17] There is, on the other hand, a belief that the work of science has been the one factor causing the greater understanding of religious truths today.[18] The overriding fact to be observed is that normally a scientific advance will show that statements of various religious beliefs, if they have contact with or are tied to physical facts, require some sort of modification either through expansion, reinterpretation, or restatement. If the particular religion is grounded in a sound expression of truth, the required modification will only "exhibit more adequately the exact point which is of importance."[19] A contradiction, in

14. Peter Harrison, *Newtonian Science, Miracles, and the Laws of Nature*, 56 J. HIST. IDEAS 531, 531 (1995).

15. *Id.* (citing R.M. BURNS, THE GREAT DEBATE ON MIRACLES FROM JOSEPH GLANVILL TO DAVID HUME 12 (1981)); RICHARD S. WESTFALL, SCIENCE AND RELIGION IN SEVENTEENTH-CENTURY ENGLAND 26-27 (1958).

16. Christopher Evans, *Rationalization, Superstition and Science, in* SCIENCE, REASON AND RELIGION 43, 45 (Christopher Macy ed., 1974).

17. Hoagland, *supra* note 1, at 17.

18. GILKEY, *supra* note 5, at 4.

19. WHITEHEAD, *supra* note 13, at 179.

formal logic, is the signal of a defeat.[20] In the evolution of real knowledge, a contradiction marks the first step in progress toward a victory, and this is the principal reason why a variety of opinion is tolerated and even encouraged.[21]

Both the scientist and the theologian depend, in the final analysis, on experience and interpretation. They ask different types of questions not expecting to receive the same types of answers in return. Science and religion are reflections of different aspects of man's social experiences. If one can move beyond popular misconceptions regarding the nature and role of science and religion, he will feel no conflict between their methods of study and practice.[22] Religion should be devoted to the expression and fulfillment of final values beyond which no other values can exist.[23] A scientific approach to religion then becomes a noble effort to study the true story of man, the relation to the source of his being and his duties, privileges, and structure of values. Science, if pursued within this construct, provides the basic framework for a new dynamic testament, a new scripture of truth about man and his destiny.[24]

If the administration of science is to be perfected for the betterment of mankind, not only are moral ideals needed, but a spiritual vision is needed as well. The most notable scientific work has flowed consistent with a high conception of social duty and with a spirit of altruism. Science is a means to an end, with its values being determined by the end.[25] Societal progress, as expressed in the law, in the ultimate analysis, must embrace two complementary plans of development: scientific research, as well as increased moral understanding and appreciation.[26]

The equivocal attitudes of Christians regarding their religious faith cannot be so easily modified. These attitudes are compounded by suspicion, ignorance, and misunderstanding: suspicion directed against advancing technology which appears to have a considerable power for good or evil depending on the technologist who directs it; ignorance from not knowing

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20. *Id.*

21. *Id.*

22. Ian G. Barbour, *The Methods of Science and Religion, in* SCIENCE PONDERS RELIGION 196, 215 (Harlow Shapley ed., 1960).

23. WILLIAM E. HOCKING, SCIENCE AND THE IDEA OF GOD 5, 8 (1944); *see also* George P. Smith, II, *Religion, Law And Conscience In A Brave New World, in* THEOLOGICAL AWARENESS AND TEMPORAL RESPONSIBILITIES 65 (1985).

24. Ralph W. Burhoe, *Salvation in the Twentieth Century, in* SCIENCE PONDERS RELIGION 77, 78 (Harlow Shapley ed., 1966); *see also* Fraser Watts, *Are Science and Religion in Conflict?*, 9 PSYCHOLOGIST 15 (1996).

25. SCHROEDER, *supra* note 6, at 60.

26. CARL W. MILLER, A SCIENTIST'S APPROACH TO RELIGION 29-30 (1947); *see also* PHILIP KITCHER, THE ADVANCEMENT OF SCIENCE: SCIENCE WITHOUT LEGEND, OBJECTIVITY WITHOUT ILLUSIONS (1993).

sufficiently the true nature of science and technology; and misunderstanding of the Christian doctrine of creation which has, in turn, led to false ideas about materialism.[27]

As viewed today, there is no actual conflict between the statement of theological principle and the scientific method of inquiry by investigation, because there is no interrelationship or mutual dependence.[28] Based on revelation and faith, theology presents its concepts and principles totally independent of the scientific theories about nature or speculations regarding the past.[29] Both science and religion present different phases of human activity and embody distinctive experiences. While religion is fundamentally a spiritual experience, science is based on "sensuous experience."[30] Yet, science and religion are one in the experience of the revelation they offer to those who pursue them: the revelation of a supreme fact of mental or progressive spirit and experience.[31] In the end, theology attempts to explain or rationalize suffering. If human suffering is merely "there," no explanation is demanded for its existence and no efforts are advanced towards its amelioration.

> Theology both demands an answer and prompts a response to the problem of suffering. In one sense the whole enterprise of biomedicine is a theological response to the enigma of suffering. The physician seeks to cure. In these activities of therapeutics and investigation,[32] the physician is seeking to ameliorate suffering.[33]

II. THE FUTURISTIC CHALLENGE

Within the not too distant scientific future, a human will be cloned[34] and the first person undergoing cryonic or deep-freeze suspension, in other words a "cryon," will be resuscitated.[35] When perfected, these biotechnological

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27. CHARLES A. COULSON, SCIENCE, TECHNOLOGY AND THE CHRISTIAN 48 (1960); *see also* THOMAS A. SHANNON & LISA SOWLE CAHILL, RELIGION AND ARTIFICIAL REPRODUCTION 2, 3 (1988).

28. GILKEY, *supra* note 5, at 25.

29. *Id.*

30. SCHROEDER, *supra* note 6, at 61.

31. *Id.* at 62, 63; *see also* JOHN H. BROOKE, SCIENCE AND RELIGION: SOME HISTORICAL PERSPECTIVES 11, 16-22 (1991).

32. Kenneth L. Vaux, *Topics at the Interface of Medicine and Theology, in* HEALTH/MEDICINE AND THE FAITH TRADITIONS: AN INQUIRY INTO RELIGION AND MEDICINE 185, 209 (Martin E. Marty & Kenneth L. Vaux eds., 1982).

33. *Id.*

34. Leon R. Kass, *Making Babies—The New Biology and the "Old" Morality*, PUB. INT., Winter 1972, at 18, 41.

35. DAVID WALLECHINSKY ET AL., THE PEOPLE'S ALMANAC PRESENTS THE BOOK OF PREDICTIONS 162, 163 (1981). The year 2012 is the target date for this resuscitation. It is predicted that in a few years, a large number of terminally ill and hopelessly aged individuals will

achievements may guarantee the immortality sought by man for so long.[36] A plethora of problems—medical, legal, social, economic, philosophical, and religious—mark the pathway for development and utilization of these scientific inventions. Indeed, these developments may well unleash what Professor Gustav Nossal observed in the 1971 Brisbane meeting of the Australian and New Zealand Association for the Advancement of Science as "monsters" of "molecular biology."[37] The direction of this present inquiry is to explore the extent to which law should develop its basic postulates and the basic legislative justifications from science,[38] or whether it merely should be responsive in a non-anticipatory manner to challenges of the "New Biology."[39] Stated otherwise, in this Essay, I will test the extent to which law marches with medicine as a partner or "in the rear and limping a little,"[40] as well as the extent to which theological perspectives provide a point of reference or balance to decision-making in issues of the New Biology.

The central question, which is posited from present experimental work in, for example, cloning and cryonics, is whether genetic engineering of this nature should be promoted and encouraged as a basic recognition of the freedom of scientific inquiry and right to privacy, or whether the common good recognizes such scientific pursuits as a hindrance to the future development of mankind

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be frozen prior to death for re-animation after medical remedies for their various maladies are discovered. I have coined the word "cryon" to describe individuals who are cryogenically suspended. This term is not found in the literature.

36. *See* OSBORN SEGERBERG, JR., THE IMMORTALITY FACTOR (1974); R.C.W. ETTINGER, MAN INTO SUPERMAN: THE STARTLING POTENTIAL OF HUMAN EVOLUTION—AND HOW TO BE PART OF IT (1972); ALAN HARRINGTON, THE IMMORTALIST: AN APPROACH TO THE ENGINEERING OF MAN'S DIVINITY (1969); Carolyn Sappideen, *Life After Death Sperm Banks—Wills and Perpetuities*, 53 AUSTRALIAN L.J. 311 (1979).

37. Julius Stone, *Knowledge, Survival, and The Duties of Science*, 23 AM. U. L. REV. 231, 232 n.2 (1973) (citing Address by Professor G. Nossal, Australian & New Zealand Ass'n for the Advancement of Science, Brisbane Meeting, 1971); *see also* GEORGE P. SMITH, II, BIOETHICS AND THE LAW: MEDICAL, SOCIO-LEGAL AND PHILOSOPHICAL DIRECTIONS FOR A BRAVE NEW WORLD (1993). By a 5-4 vote, the United States Supreme Court decided that new forms of laboratory life were eligible for patenting. Diamond v. Chakrabarty, 447 U.S. 303 (1980). Here, a new micro-organism was manufactured, which has been effective in breaking up oil spills. *Id.* In May 1987, the U.S. Patent and Trademark Office announced its decision to consider "non-naturally occurring nonhuman multicellular living organisms, including animals, to be patentable subject matter." Claudia Wallis, *Should Animals Be Patented?*, TIME, May 4, 1987, at 110. *But see* Kathleen Day, *Church Groups to Fight Patenting of Life Forms*, WASH. POST, May 13, 1995, at A3.

38. OLIVER W. HOLMES, COLLECTED LEGAL PAPERS 139 (1952).

39. Warren E. Burger, *Reflections on Law and Experimental Medicine*, *in* 1 ETHICAL, LEGAL AND SOCIAL CHALLENGES TO A BRAVE NEW WORLD 211 (George P. Smith, II ed., 1982); *see also* Philip Elmer-Dewitt, *The Genetic Revolution*, TIME, Jan. 17, 1994, at 46.

40. Mount Isa Mines Ltd. v. Pusey, 125 C.L.R. 383, 385 (Austl. 1970). *See generally* SMITH, *supra* note 37.

and, as such, dictates a policy of cautious containment and review. Viewed as an instrument to revolutionize, genetic engineering removes natural selection and favors programmed decision-making which serves to facilitate rational thinking rather than impede it. Is it shameful reality to acknowledge that man has the capability to be in control of himself? The lack of control over the years has spawned a type of "evolutionary wisdom" which, in turn, resulted in the bubonic plague, smallpox, yellow fever, typhoid, diabetes, and cancer. The quest for maximum utilization of biological and medical knowledge represents but one of the tenets of modern "evolutionary wisdom."[41] Depending upon the balance struck between the positive uses of genetic engineering for advancing societal good and those for individual need enhancement and satisfaction, genetic manipulation provides a perilous opportunity that has the capacity either to threaten freedom or enhance it.[42]

A number of Post-Darwinians in the scientific community assert that there is no wisdom in evolution—only chance occurrence. However, few would be willing to unconditionally accept all that nature bestows, particularly disease. Science, therefore, finds itself in a position of trying to both influence and, in many cases, control the process of evolution. Some would go so far as to suggest that dangerous knowledge is never half as damaging as dangerous ignorance.[43]

Basically, it will be shown then that an inherent balancing test to decision-making, legal and otherwise, should be developed, pursued, and implemented. Management of the "New Biology" will be linked either to the maintenance of an a priori standard or a situation ethic. In an a priori standard, balancing occurs, at least in theory, before the actual standard is set. A situation ethic considers the consequences of each proposed biomedical action, carefully weighs them, and concludes with an ethical posture or the structuring of a penultimate standard of modus operandi.[44]

What is called for in the final analysis is a new human rights debate among all participants shaping the directions of the New Biology—lawyers, scientists,

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41. George P. Smith, II, *Beyond the Land of Oz: Clones, Cyborgs and Chimeras*, 2 REPORTS OF THE SIXTH WORLD CONGRESS ON MEDICAL LAW 15 (1982). *See generally* THEODOSIUS DOBZHANSKY, MANKIND EVOLVING: THE EVOLUTION OF THE HUMAN SPECIES 342 (1962).

42. *See* Michael D. Kirby, *Bioethical Decisions and Opportunity Costs*, 2 J. CONTEMP. HEALTH L. & POL'Y 7, 7 (1986). The importance of this position is highlighted by Justice Kirby's present position as Associate Justice of the High Court of Australia. *See Australian General News*, Reuters News Service—Australia & New Zealand, Feb. 6, 1996, *available in* LEXIS, Australia Library, Allnews File.

43. Kirby, *supra* note 42, at 7; *see also* George P. Smith, II, *Manipulating the Genetic Code: Jurisprudential Conundrums*, 64 GEO. L.J. 697 (1976); Symposium, *The Law and the Biological Revolution*, 10 COLUM. J.L. & SOC. PROBS. 47 (1973).

44. George P. Smith, II, *Uncertainties on the Spiral Staircase: Metaethics and the New Biology*, PHAROS ALPHA OMEGA ALPHA—HONOR MED. SOC'Y, Jan. 1978, at 10, 10-12.

technologists—that will reconsider and reshape, as is necessary, the extent to which both the traditional and redefined rights of humanity are challenged or complemented by the plethora of medical, legal, scientific, and technological considerations of today's Brave New World.[45] Indeed, "[i]f lawyers are to continue to play a relevant part in the human rights debate of the future, they must become more aware of the scientific and technological advances. Otherwise, they will increasingly lack understanding of the questions to be asked, let alone the answers to be given."[46]

III. CLONING

The words "cloning" and "asexual reproduction" are used interchangeably to describe a technology of nuclear transplantation whereby an enucleated egg is renucleated with a body cell nucleus from an existing body source, or as the case may be, a human.[47] While laboratory successes with genetic engineering through the cloning process have been recorded with lower life forms, vegetables,[48] and more recently with various enzymes,[49] the major obstacle to human cloning relates to the process of perfecting enucleating and renucleating techniques for the comparatively small sized human egg cells. Another obstacle is perfecting techniques which permit a clonal embryo to be brought to term without extensive experimentation and damage to imperfect embryos.[50]

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45. Michael D. Kirby, *Human Rights—The Challenge of the New Technology*, 60 AUSTRALIAN L.J. 170, 181 (1986). *See generally* SMITH, *supra* note 37; THE PRESIDENT'S COUNCIL ON COMPETITIVENESS, REPORT ON NATIONAL BIOTECHNOLOGY POLICY (Feb. 1991).

46. Kirby, *supra* note 45, at 181. *See generally* George P. Smith, II, *Biomedicine and Bioethics: De Lege Lata, De Lege Ferenda*, 9 J. CONTEMP. HEALTH L. & POL'Y 233, 237 (1993).

47. *See* George P. Smith, II, *Assisted Noncoital Reproduction: A Comparative Analysis*, 8 B.U. INT'L L.J. 21, 24-26 (1990). *See generally* Joshua Lederberg, *Experimental Genetics and Human Evolution*, 100 AM. NATURALIST 519 (1966); James D. Watson, *Moving Toward the Clonal Man*, 227 ATLANTIC MONTHLY, May 1971, at 50; William A. W. Walters, *Cloning, Ectogenesis, and Hybrids: Things to Come?*, *in* TEST-TUBE BABIES 110, 115 (William A. W. Walters & Peter Singer eds., 1982).

48. The cloning of vegetables, especially asparagus, for obtaining greater strength and quality has been quite successful. *See The Cloning of a Vegetable*, WASH. POST, Apr. 8, 1978, at 14.

49. Not only have bioengineering technologies developed plants that make their own fertilizer and new "miracle" drugs such as interferon, but in 1982, Collaborative Research Inc. in Waltham, Massachusetts, announced that their scientists were using bioengineering techniques to clone an enzyme, rennin, used to coagulate milk for manufacturing cheese. *See A Gene-Cloning Success*, CHEMICAL WK., Jan. 27, 1982, at 19; *see also* YVONNE M. CRIPPS, CONTROLLING TECHNOLOGY: GENETIC ENGINEERING AND THE LAW 5 (1980). *See generally* Rebecca Dresser, *Ethical and Legal Issues in Patenting New Animal Life*, 28 JURIMETRICS J. 399, 400 (1988).

50. *See generally* Lederberg, *supra* note 47; Watson, *supra* note 47. *See generally* Thomas F. Lee, *Send in the Clones*, *in* THE HUMAN GENOME PROJECT: CRACKING THE GENETIC CODE OF LIFE 123 (1991).

So far as the biologist is concerned, the most compelling argument in favor of cloning is that the study and perfection of such processes would give rise to a more advanced study of the factors responsible for cell growth, multiplication, and differentiation. This would allow for investigation of various disease etiologies with the obvious purpose of advancing the overall state of humankind's health, thereby improving genetic endowment.[51] Specifically, research in combating cancer would be advanced through the study and perfected use of cloning, as would the study of gerontology. The rate of aging could be diminished and the human cycle increased. A better understanding of the body's immunological responses to disease would advance the management of allergies, infections, wound healing, and organ transplantation.[52]

There are a number of other reasons to support scientific investigation into asexual reproduction and the ultimate production of a human clone. First and foremost is the positive effect that it would have in providing a solution to infertility and problems of genetic inheritance. A man who is incapable of producing sperm or a woman who is unable to ovulate or produce eggs could be helped by cloning. In the absence of sperm cells, a man could arrange for the nucleus from one of his body cells to replace the nucleus of an egg cell from his wife. Similarly, the female without eggs could arrange for one of her body cell nuclei to replace the nucleus of an egg which would be donated by another woman. If a successful embryo were produced, it could then be transferred to the uterus of the nucleus donor or, for that matter, to that of the egg cell donor for development.[53]

The second reason for supporting research here is the effect human cloning would have on combating genetic anomalies. Thus, in those cases where one party attempting to conceive was genetically handicapped, cloning with the genetic material of the other party would avoid transmission of a defect to any offspring.[54] Here, cloning could serve as a positive force in halting the deterioration of the human gene pool and, as such, would improve the quality of health for all and could promote a program of positive eugenics.[55]

While the human clone would be recognized as a total human being, the extent to which legal and societal rights and obligations would be granted and

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51. *See supra* note 49; *see also* ROBERT G. MCKINNELL, CLONING: A BIOLOGIST REPORTS 50-77 (1979).

52. Walters, *supra* note 47.

53. *Id.* at 114.

54. *Id.* at 114-15.

55. GEORGE P. SMITH, II, GENETICS, ETHICS AND THE LAW 106 (1981). *See generally* George P. Smith, II, *Genetics, Eugenics, and Public Policy*, 1985 S. ILL. U. L.J. 435.

imposed pose difficult problems.[56] Having determined that a pre-existing cell donor will control the genetic destiny of another by cloning, it can be easily noted that the extent to which the clone has legal rights and obligations is largely determined by the circumstances surrounding its "birth." It should be understood that all important aspects of the donor's life will be replicated in the clone and this will shape expectations of the clone's ability. Indeed, those expectations will create for the clone an experience of living totally robbed of openness and indeterminacy.

Perhaps if any real "evil" exists in efforts designed to clone a human, it is in seeking to relive one's life through another. However, this attitude is not unique to those who wish to clone. It is shared by a number of "ordinary" parents who engage in normal procreation.[57] Although programmed conception may well be more humane than chance, the most serious argument advanced thus far against human cloning is that it disrupts a more authentic form of self-discovery, or in other words, it compromises personal liberty in the name of advancing science.[58]

When human cloning becomes totally feasible, basic decisions will have to be made about who may be cloned and the circumstances surrounding their cloning. A number of critics have opposed development of this field of biomedicine in order to avoid making these difficult decisions. They would willingly forget the admonition that, "Decisions determine Destiny." They would rather allow blind circumstances to dictate the future course of events instead of agonizing over immediate threshold decisions which are flavored with political dimensions.[59]

Under the principle of positive eugenics, emphasis is placed on encouraging

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56. Harry G. Frankfurt, *Freedom of the Will and The Concept of a Person*, 68 J. PHIL. 5, 7 (1971).

57. *See supra* note 41.

58. *See supra* note 41.

59. MAKING BABIES: THE NEW SCIENCE AND ETHICS OF CONCEPTION 142, 143 (Peter Singer & Deane Wells eds., 1985); Francis Canavan, *Genetics, Politics and the Image of Man*, *in* 2 ETHICAL, LEGAL AND SOCIAL CHALLENGES TO A BRAVE NEW WORLD 7, 7-17 (George P. Smith, II ed., 1982); Bernard D. Davis, M.D., *Ethical and Technical Aspects of Genetic Intervention*, 285 NEW. ENG. J. MED. 799 (1971); *see also* Philip Elmer-Dewitt, *Cloning: Where Do We Draw The Line?*, TIME, Nov. 8, 1993, at 65. In November 1993, two physicians—working with the in vitro fertilization program at the George Washington Medical School in Washington, D.C.—performed cloning experiments utilizing defective human embryos, fertilized with more than one sperm, that had no chance of growing into babies. The experiments were to have been limited to six days' duration (before the most rudimentary signs of a nervous system appeared) before the embryo cones were to be discarded. In but a few days, however, the embryos died spontaneously, and the experiment did not proceed. Rick Weiss, *The Ethics of Cloning: Who Decides*, WASH. POST, Nov. 16, 1993, at Z12; *see also* Boyce Rensberger, *The Frightful Invasion of the Body Doubles Will Have to Wait*, WASH. POST, Nov. 1, 1993, at A3.

those individuals with the best genetic profile to breed. A legislative scheme which sought to embody the concept of positive eugenics, thereby permitting only those individuals with superior genetic endowments to clone, would pose a rather serious constitutional issue. In order to be upheld, a statute of this nature would require safeguards in order to ensure against large scale cloning efforts of certain particular types of individuals.[60] Absence of these safeguards would decrease genetic variation, so important to the process of natural selection, but also would subject the statute to Equal Protection Clause challenges under the United States Constitution.[61] Accordingly, if an American court determined that a cloning statute affected a fundamental right, the state would need to show that the legislation served a compelling state interest.[62]

Obviously, the right to procreate is a fundamental right.[63] Yet, the denial of cloning procedures to those individuals who are capable of reproducing in the normal manner may not be of such an infringing nature as to trigger the compelling state interest requirement.[64] If it were not regarded as an infringement, the state would only be required to show that a rational relation existed between the legislation and an existing legitimate state interest.[65] A court could determine that a state's interest in the propagation of superior traits is impermissible because it violates the nobility clause of the United States Constitution or the prohibition against involuntary servitude found in the Thirteenth Amendment.[66] On the contrary, were a court to determine that there is a legitimate state interest in the strengthening of its gene pool through the propagation of superior traits, it would presumably have little difficulty sustaining the cloning legislation, thus finding a complementary relation to that purpose.[67]

It is possible that a meritorious claim could be maintained by those individuals who carry recessive traits by asserting that permitting only genetically superior people to clone infringes their right to procreate. If

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60. *See supra* note 55.

61. *See supra* note 55.

62. *See generally* Francis C. Pizzulli, *Asexual Reproduction and Genetic Engineering: A Constitutional Assessment of the Technology of Cloning*, 47 S. CAL. L. REV. 476, 550-51 (1974). A popular or cult science fiction movie entitled "Blade Runner," set in the year 2019, probed the difficulties of clone-like cyborgs called "replicants" who, although limited to four-year life spans, wrought havoc on the society which created them. *See* Richard Corliss, *The Pleasures of Texture*, TIME, July 12, 1982, at 68.

63. Skinner v. Oklahoma, 316 U.S. 535, 541 (1942); Griswold v. Connecticut, 381 U.S. 479 (1965) (noting that limitations upon the freedom to procreate are generally regarded as suspect).

64. Pizzulli, *supra* note 62, at 550-52.

65. Shapiro v. Thompson, 394 U.S. 618, 638 (1969).

66. Smith, *Genetics, Eugenics, and Public Policy*, *supra* note 55, at 452.

67. *Id.*

successful, such a claim would trigger strict judicial scrutiny of the cloning legislation and require the state to show a compelling interest for its legislative action.[68] The usual triggering action for the strict scrutiny test is found in legislation which threatens a basic or fundamental civil right or which contains a classification which is suspect because of the nature of the group classified and its disadvantages.[69]

Interestingly, the United States Supreme Court rarely has employed the strict scrutiny test outside the area of racial discrimination.[70] In those classifications held to be nonracial, it would appear that the Court utilizes a balancing test and considers three factors: "the character of the classification in question, the relative importance to individuals in the class discriminated against of the governmental benefits that they do not receive, and the asserted state interests in support of the classification."[71] Those legislative classifications, which are based on individual qualities adjudged wholly or largely beyond the control of the individual, are regarded as suspect.[72]

Another argument could be developed asserting that there is an equally compelling reason why a state interest exists for *prohibiting* cloning. That position would be based upon the idea that the use of this technology would erode fundamental democratic values because it would predict human identity and thus be inconsistent with the maintenance of free will. This, in turn, would result in "a diminution of one's capacity to feel free and thus of the exercise of personal autonomy" that would lead to the weakening of not only primary social constructs found traditionally within the family unit, but of the very political institutions that serve "to foster the exercise of individual autonomy and to inhibit the coercive manipulation of individuals."[73] Interestingly, the Australian National Health and Medical Research Council determined in 1983 that cloning was ethically unacceptable as a new technology simply because such experiments were not undertaken to promote "accepted family relationship[s]."[74]

It is obvious from this analysis that cloning legislation at this time in American society, given the lack of scientific certainty regarding the process itself and the even greater lack of education and sophistication of the public in all matters scientific, would foredoom social acceptance of the process.

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68. *Id.*

69. *Id.* at 451; *see also* Shapiro v. Thompson, 394 U.S. 618, 638 (1969).

70. *See* SMITH, GENETICS, ETHICS AND THE LAW, *supra* note 55, at 117.

71. Dandridge v. Williams, 397 U.S. 471, 521 (1970) (Marshall, J., dissenting).

72. *See, e.g.*, Levy v. Louisiana, 391 U.S. 68 (1968) (addressing classifications disfavoring illegitimate children).

73. MICHAEL H. SHAPIRO & ROY G. SPECE, JR., BIOETHICS AND LAW 416 (1981).

74. *Miscellaneous Notes*, 9 COMMONWEALTH L. BULL. 284, 297 (1983) (providing guidelines on cloning).

However, this attitude should not prevent continued experimentation in the field of asexual reproduction and the production of scholarly investigations which seek to probe the multiple confines of the problem area. It is only by continued effort that real progress through education can be achieved.[75] Impatience with the unknown and terror over spontaneity must be conquered.

IV. CRYOBIOLOGY

Cryobiology, or the study of low temperature biology, has been both the source and impetus for maintaining an abiding faith that death may be conquered.[76] The contributions of cryobiology to medicine include free preservation, cryosurgery, advanced research into the free preservation of large mammalian organs, and a plethora of other exciting uses.[77] Although experimentation and success in transplantation of human organs proceeds with definite success,[78] the total cryonic suspension of an entire human body *and its revival* remains speculative at best.[79]

In the 1950s, biologists working with low temperatures coined the term "cryobiology" to describe those biological investigations which were conducted well below normal body temperature.[80] Cryogenics refers broadly to the technology of low-temperature experiments, while cryonics pertains to all

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75. Seymour Lederberg, *Law and Cloning—The State as Regulator of Gene Function, in* GENETICS AND THE LAW 377 (Aubrey Milunsky & George J. Annas eds., 1976); *see also* GEORGE P. SMITH, II, MEDICAL-LEGAL ASPECTS OF CRYONICS: PROSPECTS FOR IMMORTALITY (1983); SMITH, BIOETHICS AND THE LAW: MEDICAL, SOCIO-LEGAL AND PHILOSOPHICAL DIRECTIONS FOR A BRAVE NEW WORLD, *supra* note 37, at 259-73.

76. *See generally* CURRENT TRENDS IN CRYOBIOLOGY (Audrey U. Smith ed., 1970); CRYOBIOLOGY (Harold T. Meryman ed., 1966).

77. *See generally* ROBERT W. PREHODA, SUSPENDED ANIMATION (1969); F. M. Guttman et al., *Whole Organ Preservation: II. A Study of the Protective Effect of Glycerol, Dimethyl Sulfoxide, and Both Combined While Freezing Canine Intestine Employing an In Vivo Techique*, 6 CRYOBIOLOGY 339 (1970); Peter Mazur, *Cryobiology: The Freezing of Biological Systems*, 168 SCIENCE 939 (1970); C. R. Valeri & C. E. Brodine, *Current Methods for Processing Frozen Red Cells*, 5 CRYOBIOLOGY 129 (1968); George P. Smith, II, *Through a Test Tube Darkly: Artificial Insemination and The Law*, 67 MICH. L. REV. 127, 145 (1968).

78. *See* ENDRE NIZSALOVSZKY, A LEGAL APPROACH TO ORGAN TRANSPLANTATION 162, 162-68 (1974).

79. *See generally* BASILE J. LUYET & P. M. GEHENIO, LIFE AND DEATH AT LOW TEMPERATURES (1940). As of 1980, it was estimated that there are some thirty-four bodies interred cryonically—with most of them being in California. David T. Friendly, *Chill Strikes the Cryonics Business*, NEWSWEEK, July 7, 1980, at 9. Currently, one company specializing in cryonic suspension, Alcor Life Extension Foundation, holds ten frozen bodies and seventeen frozen heads. Moreover, there are 380 Alcor members signed up to be frozen after a physician pronounces them dead. Bob Golfen, *10 Frozen Bodies, 17 Heads Await Cryonic New Life*, DENV. POST, Mar. 13, 1994, at B7.

80. PREHODA, *supra* note 77, at 7.

disciplines and programs centered on human cold-storage.[81] Interestingly, in 1663, an English scientist, Henry Power, composed a mixture of ice and salt and immersed a jar of eels in it, thereby freezing them. After one night, they were revived and the phenomenon known as "suspended animation" was originated.[82]

As malfunctioning parts of a human body become subject to replacement, the procurement and preservation of new organs become of central importance.[83] While the molecular bases of freezing damage are not fully understood, it is certain that some whole organs subjected to freezing below a certain temperature have either been nonfunctional after thawing or have become nonfunctional within a short time.[84] Thus, it is understood that a successful freezing and restorative organ program requires mastery of more than the mere ability to successfully freeze the component cells.[85]

The greatest danger of any person undergoing cryonic suspension is the need to provide as much expeditious care as possible to protect the brain and the cells. The brain remains intact for anywhere from three to five minutes, at normal body temperature, after death. However, the brain can remain without oxygen for even longer periods of time as the body temperature is decreased to -196° Celsius. At this temperature all changes virtually stabilize, and the body may remain in a near perfect state of preservation for an indefinite period.[86]

The body cells would, if left unprotected, literally burst upon freezing because seventy-five percent of the human body's weight is water and this water would expand on freezing. Since the prevention of ice crystals inside the body cells is the basic purpose of perfusion, this method, as opposed to embalming, is the lynchpin of successful cryonic suspension. In perfusion, a protective chemical, glycerol, is combined with dimethyl sulfoxide (DMSO), which serves as a rapid penetrant in carrying the glycerol to the cells through the bloodstream. Consequently, ninety percent of the cells' water is absorbed. This combination assures that the formation of ice crystals will occur not inside

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81. ETTINGER, *supra* note 36, at 251; BUTTERWORTHS MEDICAL DICTIONARY 369 (Sir Arthur S. MacNalty ed., 1965).

82. PREHODA, *supra* note 77, at 56.

83. *See* Guttman, *supra* note 77, at 339; Mazur, *supra* note 77, at 945-46.

84. Mazur, *supra* note 77, at 945-46.

85. *Id.*; *see also* ROBERT F. NELSON, WE FROZE THE FIRST MAN (1968). In 1976, there were a reported twenty-four bodies in cryonic suspension. Eileen Keerdoja, *Souls on Ice*, NEWSWEEK, Aug. 16, 1976, at 11.

86. NELSON, *supra* note 85, at 84. For a description of the cryogenic preparation of a human corpse, see LUCY KAVALER, FREEZING POINT: COLD AS A MATTER OF LIFE AND DEATH 248-56 (1970).

the cell but outside.[87] Since perfusates with a high percentage of glycerol or DMSO are acknowledged to be toxic to the cells, other chemicals also must be used in the perfusion.[88]

V. DEFINING DEATH

There are basically two types of death: clinical and biological.[89] Clinical death precedes biological death and normally occurs when one's heart and respiratory systems stop. The pupils simultaneously become fixed and dilated and tendon reflexes cease.[90] However, from a biological point of view, death occurs gradually. Thus, even after a recognition of clinical death, certain biological activities occur.[91]

Death is classically defined as the cessation of three interdependent vital body functions—circulation, respiration, and brain activity.[92] Cessation of breathing and loss of heartbeat are still viewed by many as the crucial death signs.[93] Only when artificial means are utilized to sustain these two functions has it been recognized that new criteria in determining death should be considered.[94] Owing to recent and startling advances in medical technology[95] and in the field of organ transplantation,[96] it is now recognized that

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87. NELSON, *supra* note 85, at 48.

88. *Id.* at 136-56 (providing a very graphic description of the procedure used to prepare an individual for cryonic suspension).

89. *See* Edwin H. Albano, *The Medical Examiner's Viewpoint*, *in* THE MOMENT OF DEATH: A SYMPOSIUM 19, 20 (Arthur Winter, M.D. ed., 1969). It has been suggested that there is a third form or degree of death—cellular death. This degree is not complete until at least two days after clinical death and refers to the irreversible degeneration or disorganization of individual body cells. *See* R.C.W. Ettinger, *Lasting Indefinitely*, ESQUIRE, May 1965, at 64.

Three additional forms of death have been suggested. The first is apparent death, which occurs when the outward appearances of vital functions such as respiration, circulation, and motor activity have ceased. The second is relative death, which is a term used to describe the body state between the cessation of cardiac and respiratory activity. Complete resuscitation is quite possible in the early stages of relative death. Finally, there is absolute death, or the condition where the resuscitation of a body as a whole or even where the resumption of physiological functions of either individual organs or cells is impossible. *See* Theodore I. Malinin & Vernon P. Perry, *A Review of Tissue and Organ Viability Assay*, 4 CRYOBIOLOGY 104 (1967); *see also* BARRY R. FURROW ET AL., HEALTH LAW 710-11 (1987).

90. *See generally* Albano, *supra* note 89, at 20; PRESIDENT'S COMMISSION FOR THE STUDY OF ETHICAL PROBLEMS IN MEDICINE AND BIOMEDICAL AND BEHAVIORAL RESEARCH, DEFINING DEATH: A REPORT ON THE MEDICAL, LEGAL AND ETHICAL ISSUES IN THE DETERMINATION OF DEATH (1981).

91. *See* Albano, *supra* note 89, at 20.

92. DAVID HENDIN, DEATH AS A FACT OF LIFE 18 (1973).

93. *Id.*

94. *Id.* at 24.

95. *See generally* Smith, *supra* note 23; George P. Smith, II, *The Medicolegal Challenge of Preparing For a Brave, Yet Somewhat Frightening New World*, J. LEGAL MED., Apr. 1977, at 9;

death may occur when the brain ceases to function. Such an occurrence is termed "brain death."[97]

While some commentators have drawn attention to what they perceive as sharp distinctions between the legal and the medical definitions of logical death,[98] the law generally treats the matter as a medical question of fact determined by the "ordinary standards of medical practice"[99] in each community, and the laws and customs of each state. The Uniform Anatomical Gift Act, while establishing procedures for regulating donations of organs, acknowledges simply that the death of a donor will be determined by the donor's attending physician.[100] The Act does not define the act of death, but rather "appears to operate on the premise that 'death' will be determined by standards which are generally accepted and applied in the ordinary course of events."[101]

Meeting in Australia in 1968, the World Medical Assembly argued against the use of a precise statutory definition of death by noting:

> This determination [of the time of death] will be based on clinical judgment supplemented if necessary by a number of diagnostic aids of which the electroencephalograph is currently the most helpful. However, no single technological criterion is entirely satisfactory in the present state of medicine nor can any one technological procedure be substituted for the overall judgment of the physician.[102]

Interestingly, the President's Commission for the Study of Ethical Problems in Medicine and Biomedical and Behavioral Research unanimously approved, in drafting the Uniform Determination of Death Act, that death be defined as an occurrence in which there is:

George P. Smith, II, *Death Be Not Proud: Medical, Ethical and Legal Dilemmas in Resource Allocation*, 3 J. CONTEMP. HEALTH L. & POL'Y 47 (1987).

96. *See generally* George P. Smith, II, *Market and Non-Market Mechanisms for Procuring Human and Cadaveric Organs: When the Price is Right*, 1 MED. L. INT'L 17 (1993); Jesse Dukeminier, Jr., *Supplying Organs for Transplantation*, 68 MICH. L. REV. 811 (1970).

97. Julius Korein, *Terminology, Definitions, and Usage*, 315 ANNALS OF THE N.Y. ACAD. OF SCI. 7 (Julius Korein ed., 1978); *see* David R. Smith, *Legal Recognition of Neocortical Death*, 71 CORNELL L. REV. 850 (1986).

98. Task Force on Death and Dying of the Institute of Society, Ethics, and the Life Sciences, *Refinements in Criteria for the Determination of Death: An Appraisal*, 221 JAMA 48, 48 (1972).

99. *Id.* at 52.

100. UNIF. ANATOMICAL GIFT ACT § 8 (b) (1987) (discussing the various definitions of death which may be found among state laws serving specific purposes in deciding, for example, issues of inheritance and survivorship).

101. *See* Alexander M. Capron & Leon R. Kass, *A Statutory Definition of the Standards for Determining Human Death: An Appraisal and a Proposal*, 121 U. PA. L. REV. 87, 107 n.69 (1972).

102. *International Comments: Declaration of Sydney*, 206 JAMA 657, 657-58 (1968).

> (1) irreversible cessation of circulatory and respiratory functions or (2) irreversible cessation of all functions of the entire brain; including the brain stem. A determination of death must be made in accordance with accepted medical standards.[103]

The current movement in clarifying the legal and medical concepts of death is not helpful to individuals presently in cryonic suspension or those anticipating its use. If one were "suspended" before death, the real issue becomes how the law should deal with this occurrence, especially from the standpoint of the disposition of a decedent's estate. Presently there exists in the law of property a doctrine termed the "wait-and-see" approach which is used to determine whether an interest vests within the period of time allowed.[104] This approach mitigates the harshness of the Rule Against Perpetuities which held that "a non-vested interest in property failed unless it was certain to vest, if it ever vested, within the period of the rule"[105]—twenty-one years plus lives in being.

The same approach could be utilized in developing a working definition of cryogenic suspension. Thus, cryogenic suspension would be recognized and defined in law and medicine as that state where, under medical supervision, body temperature is lowered to such a degree that a condition of temporary cessation of vital processes is achieved.[106]

Modifying the basic tenets of the Rule Against Perpetuities, one could rather arbitrarily determine that he could remain in a state of cryonic suspension twenty-one years without fear of being pronounced dead. At the conclusion of that period, a court would determine whether such a possibility of a scientific breakthrough existed for a cure of the disease which affected the person in suspension. If the state of the art had advanced to such a level that a successful cure for the suspended person's illness existed, then the court

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103. MINUTES OF MEETING XI OF THE PRESIDENT'S COMMISSION FOR THE STUDY OF ETHICAL PROBLEMS IN MEDICAL AND BIOMEDICAL AND BEHAVIORAL RESEARCH, July 9, 1981, at 3 (on file with the Archives, National Reference Center for Bioethics Literature, Georgetown University, Wash., D.C.).

104. RESTATEMENT (SECOND) OF PROPERTY § 1.4 cmt. a (1981).

105. *Id.* § 1.4 cmt. f.

106. From a medical standpoint, suspension is defined as a "condition of temporary cessation, as of any vital process." *See* TABER'S CYCLOPEDIC MEDICAL DICTIONARY 1662 (15th ed. 1988). The term "suspended death" was coined by Robert Ettinger, who defined it as "the condition of a biologically dead body which has been frozen and stored at a very low temperature, so that degeneration is arrested and not progressive. The body can be thought of as dead, but not very dead; it cannot be revived by present methods, but the condition of most cells may not differ too greatly from that in life." ETTINGER, *supra* note 36, at 3. Such a definition does not resolve the problems discussed. Indeed, this definition highlights the need for a working legal-medical concept of cryonic suspension. *See* George P. Smith, II & Clare Hall, *Cryonic Suspension and the Law*, 17 OMEGA J. DEATH & DYING 1 (1986-1987); Curtis Henderson & Robert C.W. Ettinger, *Cryonic Suspension and the Law*, 15 UCLA L. REV. 414 (1968).

could exercise its broad equitable powers of supervision to allow continued suspension for a period not to exceed ten additional years, at which time a final determination would be made regarding that status of the cryonically suspended person. On the contrary, if at the end of the initial twenty-one year period a judicial determination was made that no immediate or scientific advances promised the realistic hope of a cure and there was no real chance of revival, then a decision could be made to thaw the suspended individual and thereby recognize that death occurred, thus settling the estate.

Obviously, in order to encourage or allow physician-scientists or laypersons to participate in the preparation of an individual for cryonic suspension before death, an exculpatory clause would have to be inserted in the contract for suspension. This would confer on doctors, scientists, and others an immunity from civil and criminal liability for either failing to find a cure for the illness or participating in a medical intervention (for example, the initial suspension itself) subsequently determined by a court to be life-ending. It also would be wise to have either a judicial recognition of the immunity from a criminal prosecution for murder in connection with the acts of cryonic suspension undertaken by a physician on a living individual, or a statute that would admit the acts undertaken to initiate the suspension as an absolute bar or total defense to the prosecution.

In those cases where one seeks to have his remains cryonically preserved *after* a determination of death is made, the law should be less flexible than in the cases where the suspension has been undertaken *before* death. Failure to recognize death as death would play havoc not only with the law of property and succession, but would act to destabilize the very social and religious fabric of society. It is astounding to conceive of a society where there is no ending. As one commentator has observed, "[d]eath is the source of meaning. If you could live forever, life would be meaningless. Death is the source of man. There is no self without death."[107]

The approach postulated here for legally and medically recognizing a state of cryonic suspension has several advantages. It does not allow an estate to go unsettled for any period of time longer than the original mandate of the Rule Against Perpetuities. Indeed, in most cases the period of determinable suspension would be much less than that which the Rule allows. This approach provides hope for those few individuals who believe in cryonic suspension and revival. Finally, it recognizes an objective form of societal power in a judge, much akin to that power which society places in physicians in determining whether to stop life-sustaining processes of comatose or

107. SEGERBERG, *supra* note 36, at 266 (quoting James Carse, the then-Chairman of the History of Religion Department, New York University).

terminally ill individuals.[108] A judge given a power of this nature would of course be expected to rely upon scientific judgment regarding the particular investigation of the suspended individual's medical problem and possibilities of it being resolved.[109]

VI. A CONTEMPORARY CONUNDRUM

Thomas Donaldson, a forty-six-year-old resident of Santa Barbara County, California, believed to be dying because of an inoperable brain tumor, made recent newspaper headlines when he sought judicial recognition of his right to self-determination by seeking to be "suspended" *before* he was pronounced legally dead.[110] Before the tumor spread throughout his brain and damaged it irretrievably, he wanted his head to be severed from his body and placed in cryonic suspension. Together with samples of tissue and blood, Mr. Donaldson expected, over time, that his body would be regrown. With other individuals using cryonic suspension, the suspension had been performed *after* they were pronounced dead. Here, Mr. Donaldson sought to have what he asserted was his constitutionally protected right to be cryonically suspended *pre-mortem*. In order to complete the suspension, Donaldson petitioned the State of California to exculpate those physicians and their assistants who, in reality, would be assisting in his murder-suicide.[111] Head suspensions, as opposed to full body suspensions, are much cheaper: today costing only $35,000.00, as opposed to over $100,000.00 for full suspension.[112]

The United States Supreme Court's decision in *Cruzan v. Director, Missouri Department of Health*[113] presents an interesting situation for the California courts to ponder as they evaluate this obviously protracted case; for,

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108. *See generally* Daniel M. Schuyler, *The New Biology and the Rule Against Perpetuities*, 15 UCLA L. REV. 420 (1968).

109. Ettinger has argued that if cryonic suspension were to be recognized as an heroic measure designed to sustain life, then the concept of "mercy freezing" might have some legal validity and would thus be defined as "freezing a terminally ill patient before clinical death." ETTINGER, *supra* note 36, at 260. However, "mercy freezing" is more likely to be viewed as "mercy killing" by both the legal and medical professions.

110. Cynthia Gorney, *Frozen Dreams: A Matter of Death and Life*, WASH. POST, May 1, 1990, at D1; *see also* Donaldson v. Van de Kamp, 4 Cal. Rptr. 2d 59 (Cal. Ct. App. 1992).

111. Gorney, *supra* note 110. *See generally* Robert W. Pommer, III, Comment, Donaldson v. Van de Kamp: *Cryonics, Assisted Suicide, and the Challenges of Medical Science*, 9 J. CONTEMP. HEALTH L. & POL'Y 589 (1993).

112. GEORGE P. SMITH, II, THE NEW BIOLOGY: LAW, ETHICS, AND BIOTECHNOLOGY 99-100, 115-29 (1989).

113. 497 U.S. 261 (1990). *See generally* George P. Smith, II, *Re-thinking Euthanasia and Death with Dignity: A Transnational Challenge*, 12 ADEL. L. REV. 480 (1990); George P. Smith, II, *Reviving the Swan, Extending the Curse of Methuselah, or Adhering to the Kevorkian Ethic?*, 2 CAMBRIDGE Q. HEALTHCARE ETHICS 49 (1993).

in *Cruzan*, five of the Justices were found to be in agreement that there is substantive constitutional protection for the right to die.[114] Justice O'Connor, in her concurrence with the majority, found a liberty interest within the Due Process Clause of the Constitution to sustain and validate this right.[115] She implied that when a competent adult makes an informed decision to end his life, that decision is constitutionally protected.[116] The Court held that while a person does have a constitutionally protected liberty interest in refusing unwanted medical treatment, the state may require the elevated evidentiary standard of clear and convincing evidence to establish the uncompetent patient's preexisting desire to terminate treatment.[117] Moreover, the Court assumed in its holding that rejection of medical treatment by a competent person includes the right to reject artificial deliveries of food and water.[118] The states are able to set and determine whatever standard of evidentiary proof—a clear and convincing standard of proof—necessary to sustain a claim of right to die made by a competent or incompetent adult.[119]

Mr. Donaldson, however, is a competent adult dying of inoperable brain cancer. Consistent with *Cruzan*, a strong argument could be made that he is within the Court's guidelines in determining the extent of his autonomy and declining further medical treatment. It is one thing to condone his individual statement of autonomy and self-determination; yet, it is quite another to structure, then validate, a state policy promoting an implementation of that policy by exonerating, both civilly and criminally, those individuals assisting in actualizing his right.

On January 29, 1992, the California Court of Appeals denied Mr. Donaldson's request to have his body cryogenically preserved pre-mortem, or before his terminal illness caused death.[120] Characterizing Donaldson's request as profoundly different from the physician-assisted withdrawal of life-support systems in the more traditional right-to-die cases, the court stated that one placed on life-support systems takes a "detour" that normally postpones an immediate encounter with death, with the withdrawal of treatment merely allowing a delayed death to occur.[121] With the *Donaldson* case, however, no life-extending measures would have been discontinued. Instead, a third party would have been allowed to kill Mr. Donaldson and thereby hasten

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114. *Constitutional Law Conference*, 59 U.S.L.W. 2272 (1990).

115. *Cruzan*, 497 U.S. at 287 (O'Connor, J., concurring).

116. *Id.* at 288 (O'Connor, J., concurring).

117. *Id.* at 279-81.

118. *Id.* at 262.

119. *Id.* at 275. *But see* GEORGE P. SMITH, II, FINAL CHOICES: AUTONOMY IN HEALTH CARE DECISIONS (1989).

120. Donaldson v. Lungren, 4 Cal. Rptr. 2d 59, 60 (Cal. Ct. App. 1992).

121. *Id.* at 63.

Donaldson's ultimate death encounter. Observing that such actions have never been given judicial recognition or validated by statute, the court refused to act in such a manner. Under the facts, the court went on to recognize the legitimate state interest in protecting society from allowing third parties to either aid or abet suicide, and held that Mr. Donaldson's assistant, Carlos Mondragon, could not aid, advise, or encourage Donaldson's own suicide.[122]

VII. MAINTAINING A BALANCE

Man's dehumanization and depersonalization will not be fostered as a consequence of the continued quest for mastery of the genetic code. Attendant to the freedom to undertake research into the exciting and fertile frontiers of the New Biology is a coexistent responsibility to pursue the work in a reasonable, rational manner. Pursuing the New Biology in such a manner requires adequate attention to the safety factor in all aspects of the experimentation.[123] The undesirable elements of a "Brave New World" can be tempered only when knowledge is pursued with the purpose of establishing the truth and integrity of the question, issue, or process.[124] The vast potential for advancing society and ridding it of a verisimilitude of its present ills is an obvious good which must be preserved. Little sustained harm can result from a reasonable pursuit of truth and knowledge; indeed, truth and knowledge are the basic foundations of any balancing test. If actions are undertaken and performed with the goal of minimizing human suffering and maximizing the social good, then the noble integrity of evolution and genetic progress will be preserved.

Man must endeavor, to be sure, to execute his investigatory and manipulative or creative powers within the scientific laboratory with a rational purpose and in a spirit of humanism. Moreover, one should seek to minimize human suffering, thereby contributing to the social goal of allowing each member of society an equal opportunity to achieve his or her maximum output within the economic marketplace and to maintain personal integrity and seek spiritual tranquility. Man must use genetic engineering that contributes to the social good. There can be no doubt that genetic manipulation provides a perilous opportunity that may either threaten freedom or enhance it, depending upon the

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122. *Id. See generally* George P. Smith, II, *All's Well That Ends Well: Toward A Policy of Assisted Rational Suicide or Merely Enlightened Self-Determination?*, 22 U.C. DAVIS L. REV. 275 (1989).

123. *See* Smith, *supra* note 43, at 699-700; *see also* OFFICE OF TECHNOLOGY ASSESSMENT, IMPACTS OF APPLIED GENETICS: MICRO-ORGANISMS, PLANTS, AND ANIMALS 197 (1981); Karen Goodyear Krueger, Note, *Building a Better Bacterium: Genetic Engineering and the Patent Law After* Diamond v. Chakrabarty, 81 COLUM. L. REV. 159 (1981).

124. Joshua Lederberg, *Orthobiosis: The Perfection of Man, in* THE PLACE OF VALUE IN A WORLD OF FACTS 31 (Arne Tiselius & Sam Nilsson eds., 1970).

balance struck between its use for individual need satisfaction and societal good.[125]

Restraining scientific inquiry, then, should be limited only to action taken which is unreasonable.[126] Accordingly, an undertaking would be regarded as unreasonable when the long- *and* short-term costs of its effects would outweigh the enduring benefits that would derive from its study and implementation. Viewed as being not only an aid to the tragedy of infertility in family planning, but as a tool for enhancing the health of a nation's citizens, vital scientific research must continue in the new reproductive technologies and in efforts to engineer man's genetic weaknesses out of the line of inheritance. Healthier and genetically sound individuals have a much better opportunity for pursuing and achieving the "good life," and, in turn, they make a significant contribution to society's greater well-being.

VIII. CONCLUSIONS

Few insurmountable problems will arise for law, science, and medicine in charting the legal aspects of cryonics if a simple recognition is made of the actual state of cryogenic suspension. Legal mechanisms are already in place to effectively deal with the consequences of such action. The broad equitable decision-making powers of a court assure a measured approach to problem-solving and forestall the need for vigorous and often misguided law-making.

When the complexities of human nature set within the originating forces of law, science, and medicine are considered and evaluated within theological perspectives, it will be seen that both the scientific *and* the theological affirm the centrality of complementary truths: namely, "that human beings are both natural and spiritual creatures" and, in reality, "they face both ways."[127]

The powers of genetic creation and engineering through cloning and other procedures must be executed with a rational and enlightened purpose and in a spirit of humanitarianism or theological awareness. Human suffering, both present and future, must be minimized whenever possible. Thus, genetic engineering that contributes to the social good should be fully utilized. Obviously under this ethical imperative, society must carefully define the social good[128]—with the enhanced quality of life which genetic manipulation

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125. *See* Kirby, *supra* note 42, at 7; George P. Smith, II & Thaddeus J. Burns, *Genetic Determinism or Genetic Discrimination?*, 11 J. CONTEMP. HEALTH L. & POL'Y 23, 29 (1994).

126. *See* Russell Scott, *Legal Implications and Law Making in Bioethics and Experimental Medicine*, 1 J. CONTEMP. HEALTH L. & POL'Y 47, 48, 50 (1985).

127. Watts, *supra* note 24, at 18. *See generally* Lionel Tiger & Frederick Turner, *The Return of Human Nature*, 20 WILSON Q. 13 (1996); STEVEN GOLDBERG, CULTURE CLASH: LAW AND SCIENCE IN AMERICA 69-83 (1994).

128. *See* JOSEPH FLETCHER, THE ETHICS OF GENETIC CONTROL: ENDING REPRODUCTIVE ROULETTE 30-34 (1974); Joseph Fletcher, *Ethical Aspects of Genetic Controls*, 285 NEW ENG. J.

promises being evaluated and weighed against the sanctity of life and personal autonomy or self-representation.[129]

"If democracy is to be more than a myth and a shibboleth in the age of mature science and technology"[130] a new thoughtful and questioning attitude must be developed—one that while not viewing scientific discovery with deference and uncertainty, nonetheless refuses to allow scientific and technological directions to be set without participation and question.[131] If moral ordering is to be an end goal of medical-legal decision-making in the twenty-first century, it is well to remember that "the bedrock of moral order is religion."[132] Ultimately, then, "[i]t is for our society to decide whether there is an alternative or whether the dilemmas posed by modern science and technology . . . are just too painful, technical, complicated, sensitive and controversial for our institutions of government."[133]

MED. 776 (1971); *see also* Symposium, *Genetics and the Law*, 39 EMORY L.J. 619 (1990).

129. SMITH, GENETICS, ETHICS AND THE LAW, *supra* note 55, at 2, 109.

130. MICHAEL D. KIRBY, REFORM THE LAW: ESSAYS ON THE RENEWAL OF THE AUSTRALIAN LEGAL SYSTEM 238 (1983).

131. *Id.*

132. Ronald Reagan, *Politics and Morality are Inseparable*, 1 NOTRE DAME J.L. ETHICS & PUB. POL'Y 7 (1984). For an analysis of the responses of world religions to the new genetic revolution, see J. ROBERT NELSON, ON THE NEW FRONTIERS OF GENETICS AND RELIGION (1994).

133. KIRBY, *supra* note 130, at 238-39. *See generally* George P. Smith, II, *The Province and Function of Law, Science and Medicine: Leeways of Choice and Patterns of Discourse*, 10 U. NEW S. WALES L.J. 103 (1987); SMITH, *supra* note 112.